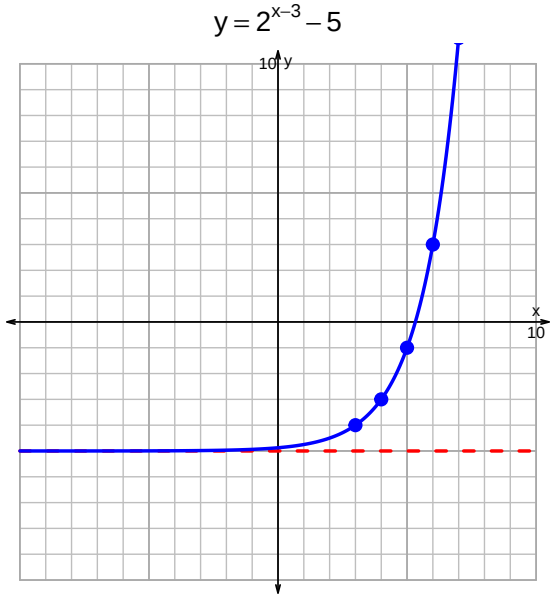
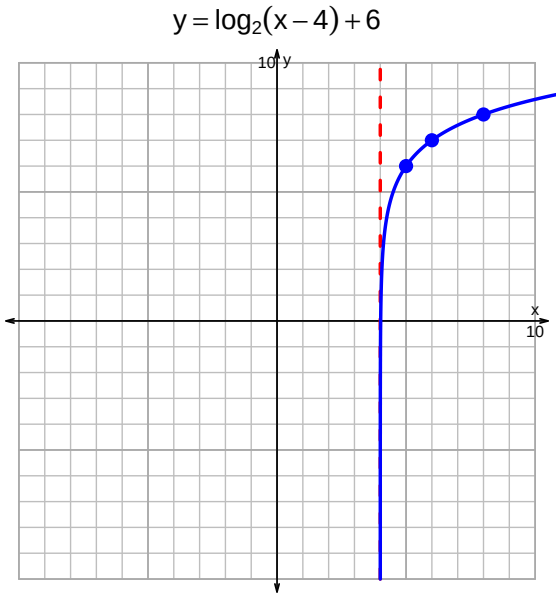
Name: Date:

S18QUIZ: EXP LOG (SLTN v270)

1. Graph $y = 2^{x-3} - 5$ and $y = \log_2(x-4) + 6$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{5}{7}\right) \cdot 10^{3t/4}$$

Divide both sides by $\frac{5}{7}$.

$$\frac{19 \cdot 7}{5} = 10^{3t/4}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{19 \cdot 7}{5}\right) = \frac{3t}{4}$$

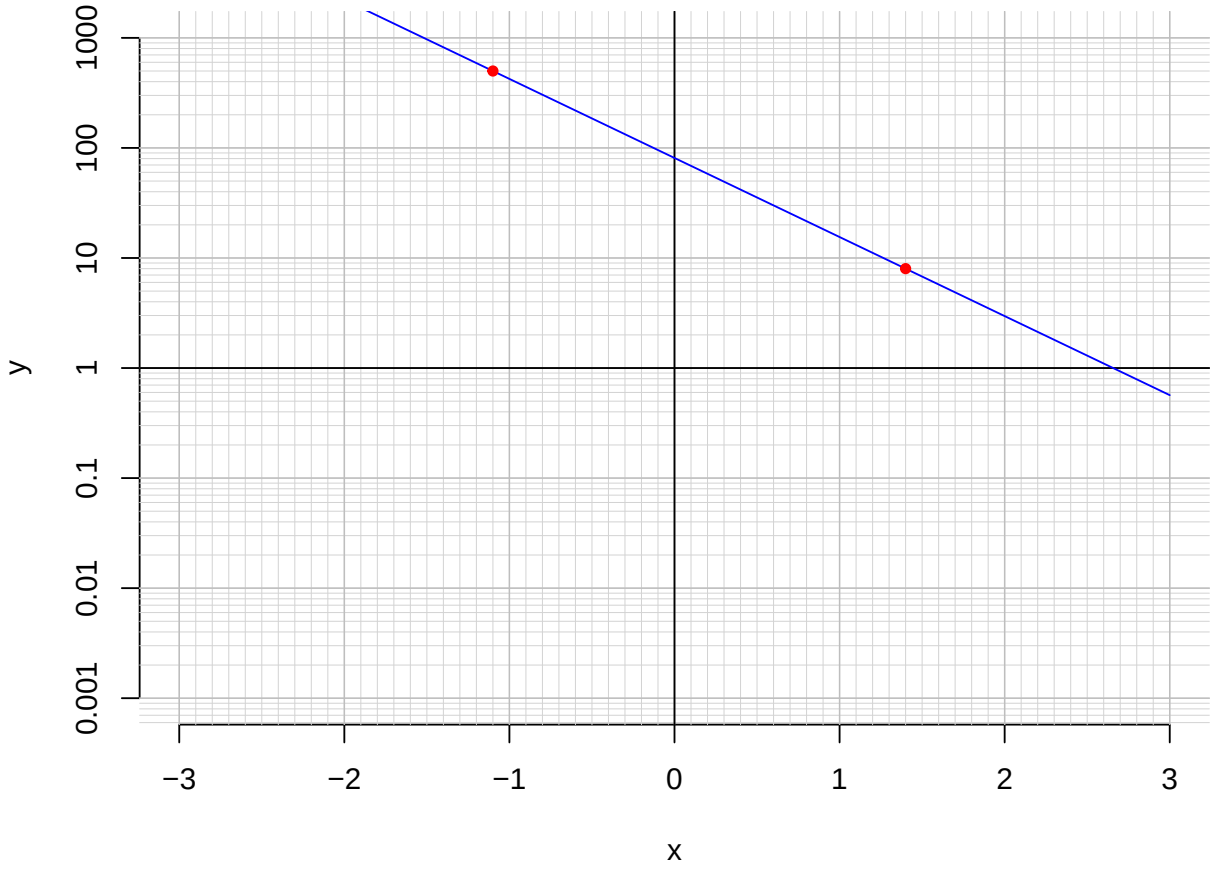
Divide both sides by $\frac{3}{4}$.

$$\frac{4}{3} \cdot \log_{10}\left(\frac{19 \cdot 7}{5}\right) = t$$

Switch sides.

$$t = \frac{4}{3} \cdot \log_{10}\left(\frac{19 \cdot 7}{5}\right)$$

3. An exponential function $f(x) = 81.1 \cdot e^{-1.65x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-1.1)$.

$$f(-1.1) = 500$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.65} \cdot \ln\left(\frac{x}{81.1}\right)$$

c. Using the plot above, evaluate $f^{-1}(8)$.

$$f^{-1}(8) = 1.4$$